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ABSTRACT

An initial listing of the tasks performed by electric power industry instructors was prepared by organizing and convening a DACUM (Developing a Curriculum) job analysis committee of 11 persons who were considered to be expert instructors in the field. The committee members, relying on their own knowledge and experience, and with the guidance of a DACUM facilitator, identified the duties and tasks that were considered important to them. They also reviewed existing instructor task lists. The tasks identified by the DACUM committee formed the basis for developing a verification instrument, which was submitted by mail to 5 to 10 expert instructors in 13 utilities. The verification respondents rated each statement on: (1) the importance of the task; (2) task learning difficulty; and (3) frequency with which the task was likely to be performed, using a six-point Likert scale. A total of 120 instructors responded to the task inventory by the cutoff date. The results of the survey are summarized in this report in terms of mean scores or percentages for each question about each task. The separately published "competency profile," which duplicates the duties/tasks contained in the first 10 pages of the "summary," lists the following 12 duties of instructors, with tasks identified for each duty: develop and maintain technical proficiency; develop and maintain instructional proficiency; assess training needs; develop/revise instructional material; prepare for instruction; coordinate and schedule training; operate and maintain instructional equpipment; deliver instruction; supervise trainees; and evaluate trainees. Members of the electric utility industry DACUM committee are also identified. (Author/KC)

Electric Utility Instructor Training Consortium

SUMMARY OF TASK VERIFICATION DATA

1987 ELECTRIC UTILITY INSTRUCTOR SURVEY

Robert E. Norton
Consortium Manager

CENTER ON EDUCATION AND TRAINING FOR EMPLOYMENT
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INTRODUCTION

An initial listing of the tasks performed by electric power industry instructors was prepared by organizing and convening a DACUM (Developing A Curriculum) job analysis committee of eleven persons who were considered to be expert instructors. The committee members were as follows: Mike Orlando and Richard Buck, Virginia Power; James B. Heishman and Eric R. Schatz, Cleveland Electric; Tom Howell and Tim Black, South Carolina Electric & Gas; Jim Byko and Jan Salas, Duke Power Company; Linda Strickland and Robert W. Allen, Tennessee Valley Authority; and Dan Drotar, Detroit Edison.

The committee, relying on their own knowledge and experience and with the guidance of a DACUM facilitator, identified the duties and tasks that were considered important to them, individually and collectively. During the final stages of the DACUM process, the panel members were also given the opportunity to review existing instructor task lists (such as those produced by INPO, Region I, and Pennsylvania Power & Light) and to use that information in refining their own job analysis.

The tasks identified by the DACUM committee formed the basis for developing a verification instrument, which was submitted by mail to five to ten expert instructors in thirteen utilities, including members of the DACUM panel. The verification respondents were asked to rate each statement on (1) the importance of the task, (2) task learning difficulty, and (3) frequency with which the task is likely to be performed, using a six-point Likert scale ranging from 0-5. A total of 120 instructors responded to the task inventory by the cutoff date.

The results of the survey are summarized here in terms of mean scores or percentages for each question about each task. In reading the data summary, use the following key:

- Task Importance: Mean is based on a 0-5 scale, where 0 = not important, and 5 = extremely important.
- Task Difficulty: Mean is based on a 0-5 scale, where 0 = extremely easy to learn to perform, and 5 = extremely difficult.
- Task Frequency: The numbers presented in the "High" column represent the cumulative percentage of respondents who indicated that they performed the task daily or more often (5), once a week (4), or once a month (3). The numbers presented in the "Low" column represent the cumulative percentage of respondents who indicated that they performed the task five to ten times a year (2), one to five times a year (1), or never (0).

The respondents were also asked to add any additional task statements they believed to be important and to answer selected other questions about themselves, their company, etc. These data are summarized question by question at the end of this report.

SUMMARY OF TASK VERIFICATION DATA

TASK STATEMENTS	Task Importance*	Task Difficulty*	Task Frequency*	
	Mean	Mean	High	Low
DUTY A: DEVELOP AND MAINTAIN TECHNICAL PROFICIENCY (OTHER)				
A001. Perform in-plant assignments	3.35	2.60	37.3	62.7
A002. Maintain currency with regulatory guidelines	4.01	2.80	61.9	38.1
A003. Review industry events	3.67	2.13	73.0	27.0
A004. Review procedure changes	3.92	2.35	81.0	19.0
A005. Review plant modifications	3.35	2.90	51.9	48.1
A006. Participate in technical vendor training	2.97	2.27	7.5	92.5
A007. Participate in technical seminars/workshops	2.97	2.15	5.4	94.6
A008. Participate in in-house technical training (e.g., course, program)	3.59	2.41	25.9	74.1
DUTY B: DEVELOP AND MAINTAIN INSTRUCTIONAL PROFICIENCY (OTHER)				
B001. Attain instructor certification	4.09	2.91	13.1	86.9
B002. Attain simulator instructor certification	2.16	3.07	10.0	90.0
B003. Prepare for instructor recertification	2.89	2.33	12.7	87.3
B004. Participate in seminars and workshops	3.04	2.01	9.6	90.4
B005. Participate in in-house continuing instructor training	3.45	2.18	12.9	87.1

B006.	Participate in peer instructional evaluation	3.10	2.46	18.2	81.8
B007.	Participate in vendor training	2.67	2.19	6.8	93.2
B008.	Maintain currency with industry instructional guidelines	3.60	2.44	27.8	72.2

DUTY C: ASSESS TRAINING NEEDS (ANALYSIS/DESIGN)

C001.	Conduct preassessment of trainee	3.29	2.76	25.7	74.3
C002.	Evaluate training needs of plant	4.24	3.41	10.8	89.2
C003.	Evaluate training needs of class	4.03	3.08	51.3	48.7
C004.	Evaluate training needs of instructors	3.56	3.07	25.7	74.3
C005.	Review job and task analyses data	3.77	3.03	25.4	74.6
C006.	Evaluate training implications of industry and regulatory guidelines	3.64	3.00	27.0	73.0
C007.	Conduct job analysis	3.42	3.46	11.4	88.6
C008.	Develop a job analysis survey	2.92	3.33	9.0	91.0
C009.	Conduct task analysis	3.27	3.47	14.4	85.6
C010.	Obtain job- and task-related documentation (e.g., INPO, JTA)	3.24	2.59	15.1	84.9
C011.	Write training development recommendations	3.56	2.97	30.4	69.6
C012.	Evaluate need for vendor training	2.90	2.68	10.4	89.6
C013.	Serve as subject matter expert for job and task analyses	3.33	3.05	23.1	76.9

*For an explanation of the scales and terms used, see the introduction.

	Task Importance	Task Difficulty	Task Frequency	
	Mean	Mean	High	Low
C014. Revise existing job analysis	3.21	3.14	15.7	84.3
C015. Identify training resources	3.46	2.70	42.0	58.0
C016. Identify training constraints	3.59	2.86	39.8	60.2
C017. Analyze existing materials	4.04	2.99	54.0	46.0
DUTY D: DEVELOP/REVISE INSTRUCTIONAL MATERIAL (DESIGN/DEVELOP)				
D001. Write program and course descriptions	3.48	3.23	25.2	74.8
D002. Formulate performance objectives based on job and task analyses	4.19	3.52	52.2	47.8
D003. Sequence performance objectives	3.73	2.88	51.8	48.2
D004. Obtain reference materials	3.77	2.58	56.5	43.5
D005. Select reference materials	3.76	2.59	48.7	51.3
D006. Develop test items based on objective level	4.37	3.62	31.3	68.7
D007. Construct lesson plans	4.39	3.64	67.8	32.2
D008. Correlate lesson plan content with objectives	4.34	3.28	68.4	31.6
D009. Develop job performance measures	3.74	3.46	43.1	56.9
D010. Revise job performance measures	3.54	3.21	26.6	73.4
D011. Develop visual and graphic aids	3.73	2.87	55.7	44.3
D012. Develop learning activities	3.78	3.34	50.5	49.5

D013. Develop simulator exercise guides	3.78	3.22	35.0	65.0
D014. Develop lab exercises	3.03	3.17	36.6	63.4
D015. Develop text/manuals	2.97	3.60	18.8	31.2
D016. Develop trainee handouts	4.06	3.13	66.1	33.9
D017. Review instructional materials for format and technical accuracy	4.06	3.22	58.6	41.4
D018. Pilot test training materials	3.29	3.15	19.4	80.6
D019. Revise instructional materials to reflect industry, plant, and regulatory changes	4.27	3.06	40.2	59.8
D020. Modify existing training methods	3.37	3.10	19.3	80.7
D021. Modify existing audiovisual materials	3.03	2.60	26.2	73.8
D022. Develop simulator team training criteria	2.13	3.14	13.2	86.8
D023. Revise simulator team training criteria	2.01	2.97	10.8	89.2
DUTY E: PREPARE FOR INSTRUCTION (IMPLEMENTATION)				
E001. Review trainee backgrounds	2.97	2.38	24.5	75.5
E002. Review course materials	4.18	2.62	62.1	37.9
E003. Select methods of instruction	3.76	2.79	45.0	55.0
E004. Personalize lesson plan	3.67	2.67	56.6	43.4
E005. Assemble training aids/equipment	3.72	1.95	63.8	36.2
E006. Set up training area (e.g., classroom, lab, shop)	3.62	1.69	68.5	31.5
E007. Identify personnel dosimetry/safety requirements	2.70	2.00	39.8	60.2

	Task Importance	Task Difficulty	Task Frequency	
	Mean	Mean	High	Low
DUTY F: COORDINATE AND SCHEDULE TRAINING (IMPLEMENTATION)				
F001. Establish training goals	3.80	3.26	25.5	74.5
F002. Develop a training matrix	3.18	3.01	19.2	80.8
F003. Schedule training activities	3.69	2.71	50.0	50.0
F004. Evaluate vendor training programs	2.77	2.95	11.6	88.4
F005. Select vendor training programs	3.39	2.78	8.6	91.4
F006. Arrange for off-site vendor training	1.90	2.30	6.7	93.3
F007. Arrange for off-site company training	1.87	2.15	10.3	89.7
F008. Arrange for on-site guest instructors	2.15	2.15	5.3	94.7
F009. Facilitate on-the-job training program	3.23	3.27	33.0	67.0
F010. Schedule reactor operator/senior reactor operator audit exams	1.71	2.23	8.3	91.7
F011. Schedule training program exams	3.19	2.25	53.0	47.0
F012. Arrange for availability of equipment and facilities	3.46	1.94	54.1	45.9
DUTY G: OPERATE AND MAINTAIN INSTRUCTIONAL EQUIPMENT (IMPLEMENTATION)				
G001. Inventory training aids and equipment	2.31	1.50	28.6	71.4
G002. Inventory lab/simulator equipment	2.05	1.56	30.3	69.7

G003.	Order needed equipment	2.82	2.02	25.5	74.5
G004.	Operate lab equipment	2.81	2.86	58.6	41.4
G005.	Make minor repairs to lab equipment	2.22	2.79	22.9	77.1
G006.	Operate simulator	2.31	2.97	53.2	46.8
G007.	Identify simulator problems	2.25	3.22	53.3	46.7
G008.	Test simulator modifications	1.91	3.14	28.4	71.6
009.	Develop test procedures for simulator	1.66	3.13	24.3	75.7
G010.	Run test procedures on simulator	1.75	2.65	28.2	71.8
G011.	Process simulator modifications	1.57	2.72	17.6	82.4
G012.	Select training equipment	3.17	2.69	28.7	71.3
DUTY H:	DELIVER INSTRUCTION (IMPLEMENTATION)				
H001.	Present formal classroom instruction	4.43	3.45	78.8	21.2
H002.	Conduct demonstrations	3.82	3.15	62.2	37.8
H003.	Conduct seminars/workshops	3.03	3.16	26.3	73.7
H004.	Conduct simulator training	2.39	3.10	50.0	50.0
H005.	Conduct tours and walk-downs	2.69	2.57	25.0	75.0
H006.	Conduct mock-up training	2.64	2.98	24.4	75.6
H007.	Conduct on-the-job training sessions	3.14	3.28	37.8	62.2
H008.	Conduct lab exercises	2.87	3.01	50.0	50.0
H009.	Administer self-study materials	2.71	2.09	32.3	67.7

	Task Importance	Task Difficulty	Task Frequency	
	Mean	Mean	High	Low
DUTY I: SUPERVISE TRAINEES (IMPLEMENTATION)				
I001. Monitor lab activities	2.70	2.48	47.7	52.3
I002. Monitor simulator activities	2.20	2.77	46.1	53.9
I003. Tutor trainees	3.71	3.26	55.5	44.5
I004. Conduct performance reviews	3.35	3.31	46.5	53.5
I005. Counsel trainees	3.50	3.44	43.6	56.4
I006. Proctor exams	3.23	1.67	63.6	36.4
I007. Direct trainee presentations	2.33	2.64	18.3	81.7
DUTY J: EVALUATE TRAINEES (EVALUATION)				
J001. Conduct written exams	3.73	2.45	72.9	27.1
J002. Conduct performance tests	3.75	3.18	69.5	30.5
J003. Conduct oral exams	3.34	3.33	46.6	53.4
J004. Conduct formative exams	2.56	2.88	31.0	69.0
J005. Conduct summative exams	2.64	2.75	32.1	67.9
J006. Conduct in-course assessment of individuals	3.43	3.14	51.0	49.0
J007. Review test results with trainees	3.94	2.55	70.9	29.1
J008. Conduct end-of-course assessment of individuals	3.67	3.05	38.9	61.1

DUTY K: EVALUATE TRAINING EFFECTIVENESS (EVALUATION)				
K001. Perform informal oral surveys (trainees, supervisors)	3.42	2.62	42.7	57.3
K002. Conduct formal follow-up surveys	3.13	2.74	19.0	81.0
K003. Conduct course critiques	3.89	2.54	46.4	53.6
K004. Analyze test items	3.76	3.19	48.1	51.9
K005. Analyze exam results	3.62	3.11	51.9	48.1
K006. Make recommendations based on course evaluation	3.87	3.10	30.1	69.9
K007. Evaluate vendor training performance	2.77	2.60	11.8	88.2
K008. Conduct emergency drill critiques	2.06	2.70	14.0	86.0
DUTY L: PERFORM ADMINISTRATIVE ACTIVITIES (OTHER)				
L001. Track trainees' progress	3.43	2.30	56.0	44.0
L002. Document trainee attendance	3.87	1.42	58.4	41.6
L003. Compile and review exams	3.41	2.51	66.0	34.0
L004. Grade exams	3.69	2.51	75.2	24.8
L005. Maintain course records	3.71	2.14	72.0	28.0
L006. Prepare special reports	2.86	2.86	37.3	62.7
L007. Respond to audits (e.g., QA, QC, INPO, NRC)	3.38	3.13	20.2	79.8
L008. Serve on committees	2.15	2.27	11.6	88.4

	Task Importance	Task Difficulty	Task Frequency	
	Mean	Mean	High	Low
L009. Perform audit of course materials	3.05	2.92	15.5	84.5
L010. Prepare a budget	2.46	3.41	2.2	97.8
L011. Assist in procedure validation	2.75	3.28	15.6	84.4

Part II - General Information

1. Name of company you are employed by:

Carolina Power and Light (10)
Cleveland Electric Illuminating (10)
Detroit Edison (10)
Duke Power Company (10)
Florida Power and Light (5)
Indiana and Michigan Electric (AEP) (10)
New Hampshire Yankee (PSNH) (9)
Pacific Gas and Electric (10)
Portland General Electric (6)
South Carolina Electric & Gas (10)
Southern California Edison Company (10)
Tennessee Valley Authority (10)
Virginia Power (10)

2. Name of plant or other site assignment:

Browns Ferry
Catawba
Cook, D. C.
Diablo Canyon
Fermi
McGuire
North Anna
Oconee
Perry
Saint Lucie
San Onofre
Seabrook
Sequoyah
Shearon Harron
Summer, V. C.
Surry
Trojan
Turkey Point
Watts Bar

3. Your present job title:

Company A
Licensed Training Instructor (5)
Chemistry Training Coordinator-Specialist (OJT)
I & C Lab/Classroom Instructor
Skills Instructor
Maintenance Skills Coordinator
Lead I & C/Technical Instructor

Company B
Senior Nuclear Operations Training Specialist
Operations Training Specialist
Senior Nuclear Training Specialist
Work Leader
Nuclear Operations Training Specialist
Work Leader--Rad Chem
Senior Training Specialist
Nuclear Training Specialist (3)

Company C
Lead Simulator Instructor
Associate Instructor (3)
Instructional Analyst (2)
Instructor (2)
Health Physics Training Coordinator for Program Development
Nuclear Production Specialist I

Company D
Nuclear Instructor
Instructor
Nuclear Training Instructor (2)
Supervisor, Nuclear Technical Training
Senior Nuclear Craft Instructor
Nuclear Craft Training Instructor
Electrical Craft Training Instructor
Nuclear Technical Instructor II

Company E
Senior Instrument Mechanic Instructor (2)
Section Supervisor
Training Officer
Simulator Instructor/Senior Reactor Operator
Simulator Instructor
Health Physicist
Safety Training Officer
Unit Supervisor
Chemist

Company F

Senior Instructor, Nuclear (2)
Mechanical Training Coordinator
Associate Training Specialist
Lead Instructor
Instructor
OSTC
Instructor (I & C)
Supervisor, Training/Power Sta. Ops.
On-site Training Specialist (Inst'l Dev. Specialist)

Company G

Nuclear Training Instructor (4)
Mechanical Instructor
Nuclear Instructor
Nuclear Training Instructor (Ops 2/3)
Nuclear Chemistry Instructor
Training Systems Analyst
Instructor Training Specialist

Company H

Associate Training Instructor
Training Supervisor Operations
I & C Training Instructor
Training Instructor (2)
Chemistry Program Senior Instructor
Elect. Instructor
Senior Training Instructor (Simulators)
Senior Training Instructor
Curriculum Development Coordinator

Company I

Accreditation Specialist
Instructional Technologist (Education Specialist)
Ops Training Instructor (2)
Senior Training Instructor, Simulator
I & C Instructor
Senior Operations Instructor
Chemistry Instructor
Maintenance Instructor
Instructor

Company J

Senior Specialist, Curriculum Development (2)
Senior Specialist, N & STU
Senior Specialist, Operator Training
I & C Developer/Instructor
Chemistry Instructor/Developer
Senior Specialist, Technical Training (2)
Senior Specialist, HP/Chem Training
Training Specialist

Company K
General Instructor
Chemistry Instructor
Electrical Training Instructor
Mech. Training Instructor
Instructor
Senior HP Instructor
Training Supervisor
I & C Training Instructor
Instructor/Developer

Company L
Training Specialist II
Training Specialist IV (2)
Radiation Protection Training Specialist III
Training Specialist III, Non-licensed Operator Training
Chemistry/Radiation Protection Training Specialist III

Company M
Lead Mechanical Instructor
Lead I & C Instructor
Licensed Operator Regulation Instructor
Curriculum Coordinator

4. Title of the person you report to:

Company A
Operating Training Unit Supervisor (4)
Plant Chemist
Skills Coordinator
Nuclear Skills Training Unit Supervisor (2)

Company B
Nuclear Training Simulator Specialist
Senior Operations Training Specialist
Assistant Director
Supervisor--Operations Training Programs
Assistant Director--Nuclear Training
Work Leader (2)
Senior Nuclear Training Specialist
Work Leader, Rad/Chem Training

Company C
Senior Instructor (3)
Associate Instructor, Health Physics Training Coordinator
Instructional Development Specialist
Program Development Specialist
Instructor
Radiation Protection Manager
Power Chemistry Coordinator
Lead Simulator Instructor

Company D
Nuclear Training Supervisor (2)
Nuclear Operations Training Supervisor (4)
Manager, Nuclear Technical Education and Training
Supervisor, Nuclear Craft Training
Nuclear Craft Training Supervisor (2)

Company E
Instrument Training Unit Supervisor
Maintenance Training Unit Supervisor
Branch Chief
Supervisor of IC & SD
Simulator Training Section Supervisor
Group Supervisor
Supervisor of Safety and General Employee Training Unit
Unit Supervisor

Company F
Supervisor, Training/PSO (3)
Supervisor--EMI
Supervisor (E&M) (2)
Supervisor Training/OPS
Supervisor Training (2)
Superintendent, Nuclear Training

Company G
Nuclear Training Administrator
Lead Instructor
Coordinator Training/Requalification
Supervisor of Operations Training
Unit 2/3 Requalification Training Administrator
HP/Chem Administrator
Safety/Emergency Preparation Administrator
Training Systems Support Group Administrator (2)

Company H
Operations Training Supervisor
Training Manager
Skills Training Supervisor (4)
Simulator Training Supervisor
Training Support Supervisor

Company I
Training Development Supervisor
Instructional Development Supervisor
Senior Ops Training Instructor (2)
Ops Training Supervisor
Senior I & C Instructor
Supervisor Operations Training
Senior Chemistry and Radiation Protection Instructor
Senior Instructor

Company J
Director (2)
Project Specialist (3)
Supervisor Non-licensed Training
Project Specialist, Technical Training
Training Specialist

Company K
Training Supervisor (5)
Supervisor (Maintenance)
Training Manager
I & C Senior Training Instructor

Company L
Training Supervisor
Unit Supervisor, Ops Training Unit (2)
Direct Supervisor, Support Group Training
Unit Supervisor, Support Group Training

Company M
Program Coordinator
Maintenance Training Supervisor
Lead L.O. Instructor
Training Support Supervisor

5. Highest level of formal education you have completed (check one):

		Percentages
a.	High school	25.0%
b.	Associate degree	15.8
c.	Bachelor's degree	20.8
d.	Master's degree	19.2
e.	Doctoral degree	.8

Approximate Total Months Military Specified: Mean = 16.69 Range = 6-24 months

6. Area or areas that best describe your current assignment (check all that apply):

		Percentages
a.	Classroom instructor	66.7%
b.	Shop/lab instructor	32.5
c.	OJT instructor	27.5
d.	Simulator instructor	21.7
e.	Instructional development specialist	41.7
f.	Other (please specify)	12.5

Others Specified

Supervisor--Rad/chem
Program Development Coordinator
Program Development Specialist
Supervisor
On-site Training Coordinator
Instructor Training Specialist
Supervisor of a. thru e. and some instruction
Instructor Training Specialist
Implementation Coordinator for Ops Program
Administrative Assistant to Supervisor
Supervisor
Task Developer
Training follow-up
Program Coordinator
Curriculum Advisor/Reviewer
Instructional Supervisor
Program Lead Instructor
Group coordination

7. Total number of instructors employed by your company: Mean = 48.70

Company A--10, 9, 40, 31, 30, 40
Company B--40, 40, 40, 50, 40, 34 on site (company ?), 80, 40
Company C--?, 200, 200, 200, unknown (Mt. Holly Training Facility mechanical maintenance group = 25), 160, 100, ?
Company D--10, 25, 50, 25, 28, 28, 14, 10, 25
Company E--100, 100. 350, 300, not sure, 350
Company F--80, 90, 35 at Surry, ?, 35, 100, approx. 100 by Power Trg. Svcs.
Company G--140, 50+, 54, 75, 50, 54, 54
Company H--35, 31, 31, 36
Company I--30, 45, 16, 40, 42, 40, 100, 500, 50
Company J--100, 100, 6, 30, 50, ?, unknown, 100-150
Company K--18, 15, 15, 15, 15, 16, 20
Company L--21, 18, 18, 18 20
Company M--100

8. Number of years you have served as an instructor:

	# of Respondents	Mean Years
a. With this company	114	3.54
b. With the military	45	3.29
c. With educational institutions	36	7.64
e. Other (please specify)	30	5.13

Others Specified

Chemical industry, all OJT setting
Other company (3)
General Electric
General Electric, Security, Radwaste
Electric Utility
Alabama Power Company
Teaching OJT to electronics technicians--computers, communications, missle radar, electro-mechanical systems
Public high schools, junior college, nurses training
NUS Corporation (Nuke Trng.)
Nuclear medical/research organizations
Industrial corporations
WPPSS and vendor training
Other power company (2)
Beaver Valley Power Station
Palisades; Waterford III; Beaver Valley
Instructional designer, not instructor
Public school science teacher
WPPSS
Public Service Co. of Indiana
NUS Corp. River Bend Sta., St. Francisville, LA
Utility Training Consultant/Coordinator
Power plants (nuclear) (2)
Other contractor
Beaver Valley Power Station
State of Oregon (Board on Police Standards and Training)
Nuclear Security Training Supervisor
Civilian employee at naval training facility and considerable experience training as R. P. Engineer
GE simulator instructor

9. Occupational area(s) of assignment in which you provide instruction (check as many as apply and indicate the number of years of experience in that field):

	% of Respondents	Mean Years
Chemistry technicians	19.2%	7.10
Radiation protection technicians	20.0	8.39
Electricians	10.8	8.10
Mechanics	15.0	9.63
I & C technicians	20.0	7.95
Non-licensed operators	30.8	3.53
Reactor operators	33.3	3.66
Senior reactor operators/shift supervisors	30.8	4.69
Shift technical advisors	26.7	3.43
Technical staff	20.0	7.06
Other (please list)	34.1	7.63

Others Specified

Managers/supervisors and instructional staff
General Employee Training
Instructor training to instructors in all areas above
Instructional Skills Development Training and Basic Instructor Training
General Employee Training (badging, etc.)
General Employee Training--plant personnel and contractors
Computer
Instr. and Supervisory Training
Instructor training and management
Plant Management
Safety and General Employee Training
Managers and Engineers--chem. and related subjects
Instructor Training
Various classes and levels thru that period
Instructor Training Certification Program/Instructional Development
Leadership/management
Crane Operators--Riggers
I was an S.TR.A. before becoming a Nuclear Training Instructor
Instructor Training
Instructors (3)
Nonnuclear Power Plant Operation (propulsion)
Welders (certified nuclear)
Instructor Training (2)
Fire Protection Training
NRC Examiners, Battelle Scientists
Instructor Certification
USN Electronics Technicians and Saudi Arabian Naval Personnel
QA Personnel
Systems, manuals, safety
Emergency Plan
Management and supervision
Construction, emergency plan, management, engineering, quality control
Training Department Instructors
Security
Radiation protection to all company employees disciplines and to general employees
General Employee Training (radiation protection)
Inst. Tech. Trg. to all areas

10. Type of education/training received for your job as instructor (check all that apply):

	Percentages
a. Took formal courses	75.0%
b. Completed self-study materials	49.2
c. Attended workshops	70.8
d. Learned by doing	85.8
e. Participated in supervised on-the-job training	35.0
f. Read instructor's manual	44.2
d. Other (please specify)	18.3

Others Specified

Experience at the job position being taught
Watching others
Military training
Instructor Training with Duke Power
Past experience in the maintenance field
NICI Requirements for becoming an instructor and plant experience
College degree (2)
Observe training conducted by qualified instructor
Served as on-shift S.R.O.
Evaluation of performance in simulated class and in actual class
Basic Instructor Training Course
Participation in educational organizations (PDK, National Council of Teachers of English, etc.)
SCE has an excellent basic "Teacher Training" program.
Educational degree (2)
Reading of germaine literature
M.A. degree in education + postgraduate work
Went through numerous vendor manuals
USN Instructors school
Tutored in high school, in college
Attended US Marine Corp Instructional Management School
For training to be an instructor it was mostly "learned by doing"
Navy Instructor Training School

11. Adequacy of the training you initially received as an instructor (check one): Mean = 3.04

a. Very adequate = 4
b. Adequate = 3
c. Inadequate = 2
d. Very inadequate = 1
e. Received none = 0

12. Please list up to six worker traits or attitudes that you feel are most important to be a successful instructor:

Company A

Persistence
Good study habits
Patience (2)
Ability to listen and understand questions
Enthusiasm (2)
Knowledge of subject matter (4)
Commitment
Confidence
Good communication, public-speaking skills--verbal and writing (2)
Good natured and outgoing personality (2)
Good rapport with trainees
Organized (2)
Willingness to help
Understandable
Creditability
Honesty (2)
Safety conscious
Ability to think on feet
Logical approach
Positive mental attitude
Self-motivated
Self-directed
Fair

Company B

Desire to present a quality product
Outgoing (2)
Dedication
Enthusiasm
Resourceful
Responsible
Tolerant
Communication skills (3)
Desire to want to help (3)
Patience (2)
Listening skills
Concern for trainee
Showman
Organizational understanding
Attention to detail
Perserverance
Willingness to learn
Willingness and ability to relate with students
Concern for student's point of view
At ease in front of groups

Company B (continued)

Technically competent
Able to field questions
Not easily flustered
Ability to keep chain of thought when interrupted
Understanding
Job knowledge
Sense of humor
Emotional warmth
Freedom of thought for trainee
Mutual respect
Curiosity
Positive attitude towards learning
Drive to improve performance
Honest
Respect for trainees
Desire for knowledge
Extrovert
Good public speaker
Knowledgeable in area instructing
Organized
Good interpersonal communications skills

Company C
Enjoy teaching/interested in subject matter (4)
Superior technical knowledge (2)
Positive attitude/motivation
"Real world" experience in material being taught (2)
Good communication skills and instructional "know how" (5)
Organized (2)
Dependable
Open-minded (flexible) (3)
Patience (3)
Confidence (2)
Commitment (2)
Time management
Intelligence
Responsible
Loyal
Creative
Stable/adaptable
Assessment
Flexible
Enjoy being with people (2)
Truthful
Sense of humor
Neat appearance
Good voice projection
Good eye contact
Above all make it interesting

Company C (continued)
Professional (2)
Personable
Active listener (2)
Articulate
Accept criticism
Plant experience
Supervisory experience
Self-motivation

Company D
Desire to instruct (7)
Material competence (2)
Professional attitude/appearance (4)
Leader (2)
Communicator (4)
Team oriented/care for student (6)
Confidence/self-esteem (2)
Positive
Motivation (3)
Enthusiastic (3)
High degree of analytical/synthesis skills
Empathy
Good overview of the tasks performed by student
Realize value of student's input in training
Present information in a logical, orderly manner
Ability to evaluate session, determine change, and implement
Experience
Knowledge (3)
Desire to learn
Patience
Cooperation with others
Research abilities
Flexible

Company E
In-depth knowledge of material and systems (7)
Communicator (2)
Personable (2)
Supervisory skills
Ability to reason
Mechanical aptitude (2)
Professional
Self-discipline
Good speaking ability
Desire to perform the job well
People oriented (2)
Technical competence
Positive
Enthusiastic (4)

Company E (continued)
Good listener (2)
Honest
Genuine interest in students (2)
Desire to be a good instructor (2)
Desire to continue learning (2)
Plant experience (3)
Consistency
Respect within field
Ability to lead
Ability to express ideas orally and in writing

Company F
Technical expertise (7)
Desire to be a good instructor (3)
Ability to accept criticism (2)
Personality that doesn't "turn off" the trainee (3)
Desire to learn and understand more than the surface items
Initiative and drive to work unsupervised (2)
Negotiator
Credibility
Patience
Communicator (3)
Professional
Flexible/adaptable
Good speaking voice (3)
Enthusiastic (3)
Positive attitude about the company (3)
Positive self-image
Neat appearance
Honest (2)
Eager to convey information
Intelligent
Verbal skills
Willingness to try new approaches to instruction

Company G
Like and believe in training (3)
Enthusiasm (3)
Positive attitude about the company
Believe that students can succeed
Like people
Positive attitude about own ability (3)
Ambition
Friendly
Motivated
Intelligent
Communicator
Keep presentation interesting
Accountable
Sense of humor (2)
Good speaking ability
Good listener
Flexible
Analytical
Logical

Company H

Flexible
Determination
Outgoing
Ability to think on your feet (2)
Communicator (3)
Desire to be a trainer (2)
Motivation
Willingness to admit error and correct in timely manner
Willingness to work overtime
Ability to establish credibility at all levels of instruction (4)
Knowledge of TSD
Knowledge of subject (3)
Enthusiasm (2)
Informal presentation
Brevity
Clarity
Organizational skills
Adaptability
Emotionally in control
Positive
Good personality
Motivation (3)
Creativity (2)
Persuasion
Conflict management
Empathy (3)
A desire to be of service to students (service attitude)
Open-minded
Instruction techniques
Ability to articulate verbally and in writing

Company I

Concern for students (3)
Concern for technical accuracy (6)
Concern for good instructional technique (2)
Willingness to try new methods (2)
Enthusiasm for teaching (3)
Eagerness to grow in technical and instructional skills
Plant knowledge (2)
Patience
Must be very observant (2)
Willingness to keep learning after license or certification process
Sense of humor
Ability to listen and interpret what you hear (2)
Commitment (2)
People skills (4)
Willingness to work til job is done right (2)
Organized (2)
Personable
Leadership

Company I (continued)
Ability to accept criticism
Communicator (2)
Make the material flow
Encourage and anticipate questions
Make tests challenging but job-related
Be a good listener

Company J
Conscientious (2)
Caring (2)
Meticulous
Organized (2)
Sense of humor (4)
Knowledge of the subject (5)
Confidence (2)
Knowledge of the teaching technique (2)
Control of language
Interpersonal skills
Desire to teach (3)
Desire to learn
Motivator
Previously in operations
Able to take abuse
Enthusiastic
Good listener
Do not talk down to techs
Earn techs respect
Place yourself on other side of podium
Be yourself
Interest in students' progress
Good presentation skills (4)
Optimistic
Patience (2)
Dedication to craft (2)
Relate to student needs
Articulate
Ham
Leadership/managerial qualities

Company K
Knowledge of the subject (2)
Patience (5)
Innovation
Communicator (3)
Energetic
Appearance (2)
Compassion
Perservance
Thoroughness (2)
Perspective

Company K (continued)
Desire to know how and why, a thirst for knowledge
Confidence (3)
Competent
Open-minded (2)
Be able to throw the bull with the best of them
Empathy
Sense of humor (2)
Enthusiastic
Good organizational skills (2)
Understanding
Motivated
Personable
Authoritative
Don't be a lecturer
Intelligent
Concentrate on facilitating learning
Don't be afraid to say "I don't know"
Learn with the learner
You can't "teach" anything of significance to anyone at anytime. You can only do your best to make learning happen.
Need to help people
Technical credibility (2)
Proactive
Desire for quality work
Creativity
Optimism
Cooperativeness--desire to collaborate

Company L
Desire to teach (2)
Concern for trainees (3)
Ability to plan
Ability to organize
Creativity (2)
Professionalism
Analytical
Objective
Self-starter
Compassion (2)
Have high goals
Enthusiasm
Organized (2)
Enjoy learning
Talk on level of audience
Communicator
Listener
Interest in technical area
Conscientious
Motivation

Company M

Listener (2)
Speaker
Professional appearance
Must have respect for students
Writer
Planner
Knowledge of subject matter
Lesson preparation
Communicator (2)
Role model
Administrator
Limitless imagination
Observant
Desire to facilitate learning
Discipline
Ability to gauge student knowledge and deliver material at the appropriate level
Ability to construct good illusions of reality
Patience

13. Type of training materials that would be most valuable for new instructors:

	Percentages
a. Performance-based modules	34.2%
b. Instruction manual	5.8
c. Self-study learning guides	6.7
d. Other (please specify)	50.0

Others Specified

Company A

Workshops on Instructing
OJT

Company B

One-on-one with SME's, other instructors, and seminars with professors in education from local universities covering points to effectiveness.

Company C

Training materials should be a combination of the ones listed; each method has its strengths and weaknesses. Select the best method for the concepts being taught. This also provides variety which keeps the instructor interested.
Formal Instruction in Instructional Systems Design--Educational Psychology
Videotapes of examples of Inst. techniques
Instructor courses led by a facilitator that allow the group to exchange ideas and benefit from each other's experiences.
Cross-training under other experienced instructors!!!
INPO Guideline 85006 (Principle of Training System Development)
Experience and practice with small groups

Company D
Apprenticship program based on. . .

Company E
Material listing examples of how to and how not to approach a particular type of training
O.J.T.
Properly designed and selected classroom courses with an instructor
Methods on how to present, how to make ideas clear, how to involve students

Company F
Classroom training
In-class evaluation by training specialist(s)
Workshops and seminars (2)
Participation workshops (like student teaching, etc.)

Company G
Watching good role models instruct
Classroom instruction with practice labs
Workshops with role-playing for classroom--OJT for simulator
Classroom lectures on teaching techniques

Company H
Communication skills

Company I
Workshops or one-on-one instruction
Parallel experienced instructor
License Program
Classes on technique and control
A well-defined curriculum

Company J
OJT with qualified instructor and qualification cards
Video/audio course notes

Company K
Spare equipment from the plant
Videotaping lectures
Supervised OJT

Company L
Formal contact instruction

Company M
Formal training (instructor driven)
Minimum 1 month instructor training school similar to the one conducted at Naval Training Center, Great Lakes, IL
Combination of text/inst. man./with OJT
Instructor-led supported by performance evaluations

14. Please list two or more references that you have found most valuable in your job:

Company A

Technical manuals
System prints
Guidelines for simulator training INPO 86-026
10CFR
Perry Fsar
I have found no references I liked for instructor development
Preparing Instructional Objectives (Robert F. Mager)
Perry Nuclear Power Plant Training Manual
NUREG 1220--Training Review Criteria and Procedures
INPO 86-029--Development and Implementation of On-The-Job Training Programs
Writing Objectives (Robert Mager)
Test Construction for Training Evaluation (Charles C. Denova)
Course handouts from Westinghouse "Instructional Skills Workshop"

Company B

Mager Library (3)
Preparing Instructional Objectives, Developing Vocational Instruction, Developing Attitude Toward Learning
Instructional Technology Workshop by General Programmed Instruction
ISD Model
Evaluating Training Programs (Kirkpatrick)
T & D Handbook (Kirkpatrick)
System descriptions
Prints
Technical manuals
Inter Service series on ISD
Ferm1 2 ITT Manual
Mil specs
Owners, vendor Manuals
Procedures/Maintenance Instructions
Process Instrumentation and Controls Handbook
Considine (McGraw Hill)
Dictionary
Thesaurus
Verb list
Detroit Edison Instructional Technology Course

Company C

Various information documents
10CFR Parts 0 to 99
ANSI/ANS-3.5
NUREG-304 subscription
Introduction to Health Physics (Cember)
Radiation Detection and Measurement (Knoll)
Principles of Radiation Protection (Morgan & Turner)
Radiation Safety Technician Training Course (Argonne National Laboratory)
Mager
Madeline Hunter
Norman Gronlund

Company C (continued)
INPO publications
NRC publications
Systematic Processes of Instruction-Manuals
Technical Training Center Directories
INPO Guidelines/publications
Instructional Design (Briggs)
Constructing Achievement Tests (Gronlund)
"Production Training Services Directive"
Lesson Plans for the Topic
"Machineries Handbook" 21st and 22nd ed. (Oberg, Jones)
The Wordbook II (poor spellers dictionary) my spelling is hideous
INPO 82026 Technical Instructor Training and Qualification
INPO TQ501 Development and Implementation of On-the-Job Training Program
INPO 8Z-006 Radiological Protection Technician Qualification
Handout from ISD Duke Power Instructor Training Course
Handout from objectives Duke Power Instructor Training Course
Station procedures
Dictionary
Technical Reference Books for Simulator Area EPRI studies/reports
EPRI studies/reports
ETQS task list
Vendor manual

Company D
NUS Training Manual
NTCI document
INPO Good Practice TQ-501
Test Construction for Evaluation (Charles C. Denova)
Training Development Guide ISBN-0-8359-7791-9 (Ronald Ribler, Reston Publishing Co., Reston, VA)
Test Construction for Training Evaluation ISBN 0-422-22073-1 (Charles C. Denova, Van Nostrand Reinnold Publishing Co.)
NUREG 1220
Various INPO publications
Dictionary
Thesaurus
Handbook of Chemistry and Physics (West)
Handbook of Industrial Water Conditioning (Betz)
Instrumental Methods of Analysis (Willand, Merritt, and Dean)
Radiation Health Handbook
Nuclear and Radiochemistry (Friedlander, Kennedy, and Miller)
Plant procedures
Materials/books from previous classes attended
"Test Construction for Training Evaluation" (Denova)
"Instructor's Handbook" (NOS)
Vendor supplies instructor training
Classroom evaluation feedback

Company E

I have found no references that compare to the methods of "learn by doing" or "learn by observing others." To become an effective instructor, one must develop the skills and techniques required over a period of time, gained only by performing in the classroom

Bloom's Taxonomy
Adulthood and Aging
Robert Mager Library
ISD, Learning Principles (Gagne)
Job Analysis (Gael)
Hierarchy of Learning (B. Bloom)
May Seagoe
INPO Simulator Instructor Guidelines
Sequoyah Simulator Instructor's Manual
NUREG 1022-NRC Examination Standards
Plant technical specifications
Emergency Instructions
Plant prints
Plant system's manuals
Introduction to Health Physics (Herman Cember)
Principles of Nuclear Radiation Detection (Geoffrey G. Eichholz and John W. Poston)
Nuclear and Radiochemistry (Friedlander, Kennedy, Macals, Miller)
Environmental Aspects of Nuclear Power (Geoffrey G. Eichholz)
Safety Training for the Supervisor (James E. Gardner)
Life Safety Code Handbook (James K. Lathrop)
OSHA History, Law, and Policy (Benjamin W. Mintz)
NUS Training Modules
Textbooks in chemistry, physics, and nuclear physics
Manuals on water quality
Handbook of chemistry and physics
Procedures manuals

Company F

GE Simulator Instructor Training Course
Gregg Reference Manual
Dictionary
Thesaurus
My ITCP Instructional specialist!
Plant Energy Systems
The Art of Negotiation
NUREG/CR 4344
ITCP Program Guide
Equipment technical manuals
Other Instructors (2)
Subject matter textbooks
Students
Instructional Development Specialist
INPO Good Practice Guides (says what, now how)
Testing and Measurement in the Classroom (Scannel and Laird)
AV Instruction: Technology, Media, and Methods (Brown, Lewis, and Harcleroad)
Approaches to Training Development (Dugan and Laird)
Fundamentals of Classroom Instruction (GP Courseware)

Company G

"Training" Magazine (3)
Our Corporate Goals (So. Calif. Edison Co.)
Edison System of Manuals (How our company wants business done)
UCLA Class "A" Vocational Credential Training Material
Plant drawing, procedures, engineering (verbal or written) information
Vendor manuals (2)
FUR (OJT) California Fire Service Training Manual
The Winning Trainer (J. Edington)
Art of Questioning
San Onofre Operating License (technical specifications)
Plant operations procedures (normal, abnormal, emergency)
Engineering textbooks--heat transfer, thermodynamics, etc.
INPO publications (2)
Journal of Chemical Education
Journal of Analytical Chemistry
Assortment of educational handouts and books
Instructional/Quality Inventory NPRDC, US Navy (Ellis and Wulfeck)
Instructional Design Series
Ed. Tech Publication
106 Alpha, US Navy
Mager Library and everything else he's done! (2)
The Adult Learner (Malcom Knowles)
INPO's Technical Instructor Training and Qualification

Company H

Mager Library (3)
Arkansas Tech Instructor Seminar and notes
Kepner Tregoe Course (modified)
Plant procedures
Westinghouse technical manuals
Instrumentation technical manuals
TSD manuals (INPO) (3)
American Electricians Handbook
Instructional Technique (Davies)
Principles of Instructional Design (Gagne and Briggs)
The Conditions of Learning (Gagne)
The Instructional Quality Inventory (Wulfeck, Ellis, Richards)
TRADOC 315
Program Evaluation (Brinkerhoff)
Preparing Instructional Objectives and Goal Analysis (Mager)
Principles of Education Measurement and Evaluation (Sax)
Goal Analysis (Harless material)

Company I

Conditions of Learning (R. M. Gagne)
Principles of Inst. Design (Gagne and Briggs)
Handbook of Procedures for the Design of Instr. (Briggs and Wagner)
INPO TSD manual
Robert Mager Associates materials (5)
NVESDTRA 110 documents
INPO/NCR LER reports used as basis for simulator scenarios
Plant/LER reports used as basis for simulator scenarios
Plant Document Control Center
Roger Jett-Simulator Supervisor
Jim Molder-Ops Training Supervisor
Vendor manuals (2)
Company procedures (2)
Technical publications (2)
Procedures (legal documents)
Dictionary
INPO Guidelines/Good Practices (2)
10CFR 20, ANS/ANSI Stds.
Company's Author Development Guide
Teaching as a Subversive Activity (N. Postman and C. Weingartner)
Magic Demystified (B. Lewis and R. F. Pucelik) (anything from the Neurolinguistic Programming Inst.)
Class notes from "Optimalearning" (a course by Ivan Barzakov)
WCAP-8408B (Nuclear Design Report for Diablo Canyon)
GE Chart of the Nuclides
ASME Steam Tables
Knowledge of other Instructors

Company J

Dictionary (2)
Plant Procedures
INPO Guidelines
OJT
Simulator Exercise Guides
Control manipulation requirements
Vendor course materials
Plant-specific lessons, systems descriptions, good quality control wiring diagrams (2)
EPRI's SGOG Guidelines
Guidelines for development of the training and qualification program
Chemistry procedures
Modern Marine Engineers Manual
Millwrights and Mechanics Guide
"CRI," for development (Mager)
Test Construction for Evaluation (Denova)
Introduction to Health Physics (Cember)
Environmental Radioactivity (Eisnbud)
Radiological Health Handbook (US Government)
Criterion Reference Instruction (Mager)

Company K
Speaking to the employees
Department Procedures
Experience
Handy Reference Guide for Chemistry Technicians (Sugar, Sugar, Bauman, Bauman)
Science Encyclopedia (Van Nostrum)
Test Construction for Training Evaluation (Denova)
LERs (most important)
IE Bulletins
Vendor manuals
Preparing Instructional Objectives (Mager)
Radiological Health Handbook
Introduction to Health Physics (Cember)
Instructor Development Training text (Duquene Light Co.)
Training magazine
Journal of Training and Development (2)
Our own instructor's workshops
Training Manager
Principles of Instructional Design (Gagne and Briggs)
TSD/ISD
Instructional Technique (Davies)

Company L
USMC Instructional Management class notes
Instructional Technique (Davis, Ivor, 1981)
INPO Training System Development Manual
INPO Course on Training System Development
Preparing Instructional Objectives (Mager, R. F.)
Navy IT and Curriculum Development Manuals
Research Methodology in Business
Groups: Theory and Experience
Intro to Personnel Management
Radiation Fundamentals (Navy)
RRRPT Study Guide
Radiation Biology (Casarett)
Effective Classroom Instruction (Practical Management Associates, Inc.)

Company M
INPO TSD Manual (2)
INPO Guidelines 86-018
CRI (Mager)
ISD Model-CNTT (Military)
Skilled Performance: Perceptual and Motor Skills (A. T. Welford)

15. Comments:

Company B

Tried to evaluate solely as a Simulator Instructor.

There should be a prerequisite course covering all documents referenced above (14), before an Instructor can be certified.

Station procedures, dictionary, station training manual.

Company E

Under the "Task Difficulty" column your explanation addressed learning difficulty of the Instructor for a related task. In most cases, the learning portion of the job is not difficult. The problem is being able to perform the task. I answered some of these statements based on difficulty to perform the task, not difficulty of learning the task. Maybe an additional column should be added, "Difficulty to Perform"??

In actuality the best method of learning how to instruct a class is to simply teach. Experience is the best teacher because you can see for yourself where your strengths and weaknesses are. This is not the most desirable method since you are learning at the expense of the students.

Company F

I feel that this was a very difficult and unnecessarily complicated survey. I don't feel that it is fair of you to ask someone the difficulty or frequency other Instructors would apply to the survey items.

Under the difficulty statements, I could not correlate, or they were not applicable to the statements. In many cases, the difficulty is finding time. We don't have the time to do much of what was circled as important.

#14. Right now there are few (if any) utility Instructor training references. We have all sorts of regulations on what we must do, but little on how we should/could do it.

For those items which are circled "not important," I also wrote NA beside the task. Rather than identify a task as not important, I prefer "NA" for "not applicable to my job." I found the responses available under "difficulty" debatable. Also, the "frequency" responses available were taxing. I think an option such as "once or twice" a month would have been better. The option is 12 times a year (once a month) or 52 times a year. To me, that's quite a spread.

Company G

We have an established training program. Instructor's time is more teaching and a lot less administrative and development than 3 or 4 years ago.

I certainly hope that this survey will be of assistance in the training of Instructors nationwide.

Company H

Many of the responses provided are based on programs and methods we presently have in place; others are based on future plans for improvement.

Company I

As an Instructional Systems Designer, I design (and [illegible]) Instruction for the staff. I also design and implement task analyses, evaluation programs, and performance improvement interventions. I don't teach. I responded to this survey as an Instructional Designer only.

Personally it looks like your databases may be too broad based. If you ask Instructors in good and not-so-good organizations to respond, isn't that like asking farmers how to farm, regardless of whether or not they are feeding their families? In bookcases your surveys will run the entire gamut.

Company J

I answered the survey from the standpoint of the classroom/lab instructor. I was for 4-1/2 years before current position. Would have been difficult/impossible to answer from standpoint of present position.

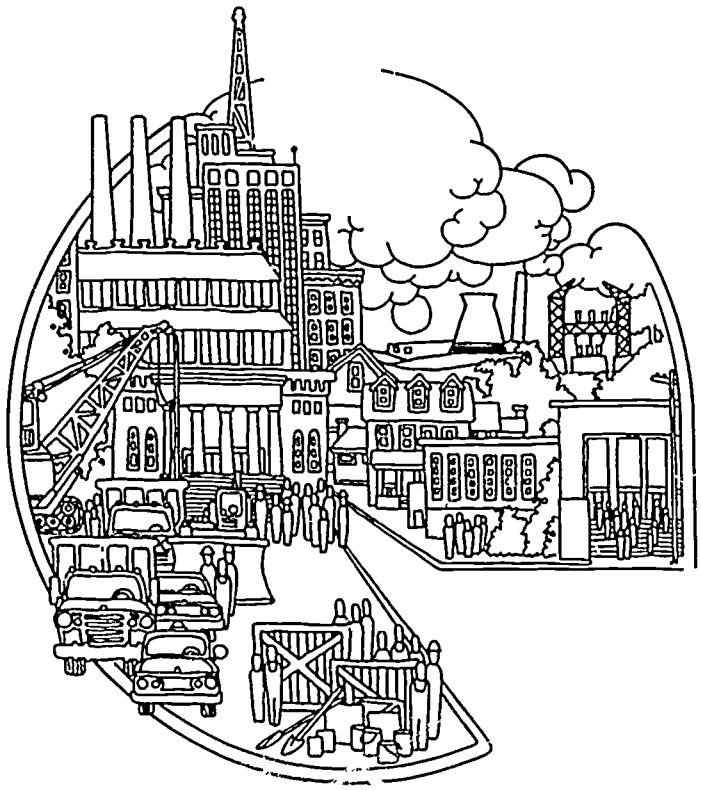
Excellent study

Company K

Task difficulty should not have "In learning to do," but merely "to do." You measured importance, difficulty, and frequency; but do not measure frequency we think we <u>should</u> be doing it.

Electric Utility Instructor Training Consortium

COMPETENCY PROFILE OF INDUSTRY INSTRUCTOR



Industry Instructor

Duties	Tasks											
A Develop & Maintain Technical Proficiency	A-1 Perform in-plant assignments	A-2 Maintain currency with regulatory guidelines	A-3 Review industry events	A-4 Review procedure changes	A-5 Review plant modifications	A-6 Participate in technical vendor training	A-7 Participate in technical seminars/workshops	A-8 Participate in in-house technical training				
B Develop & Maintain Instructional Proficiency	B-1 Attain instructor certification	B-2 Attain simulator instructor certification	B-3 Prepare for instructor recertification	B-4 Participate in seminars and workshops	B-5 Participate in in-house continuing instructor training	B-6 Participate in peer instructional evaluation	B-7 Participate in vendor training	B-8 Maintain currency with industry instructional guidelines				
C Assess Training Needs	C-1 Conduct preassessment of trainee	C-2 Evaluate training needs of plant	C-3 Evaluate training needs of class	C-4 Evaluate training needs of instructors	C-5 Review job & task analyses data	C-6 Evaluate training implications of industry & regulatory guidelines	C-7 Conduct job analysis	C-8 Develop a job analysis survey	C-9 Conduct task analysis	C-10 Obtain job- & task-related documentation	C-11 Write training development recommendations	C-12 Evaluate need for vendor training
	C-13 Serve as subject matter expert for job & task analyses	C-14 Revise existing job analysis	C-15 Identify training resources	C-16 Identify training constraints	C-17 Analyze existing materials							
D Develop/Revise Instructional Material	D-1 Write program & course descriptions	D-2 Formulate performance objectives based on job & task analyses	D-3 Sequence performance objectives	D-4 Obtain reference materials	D-5 Select reference materials	D-6 Develop test items based on objective level	D-7 Construct lesson plans	D-8 Correlate lesson plan content with objectives	D-9 Develop job performance measures	D-10 Revise job performance measures	D-11 Develop visual & graphic aids	D-12 Develo learning activities
	D-13 Develop simulator exercise guides	D-14 Develop lab exercises	D-15 Develop text/manuals	D-16 Develop trainee handouts	D-17 Review instructional materials for format & technical accuracy	D-18 Pilot test training materials	D-19 Revise instructional materials to reflect industry, plant, & regulatory changes		D-20 Modify existing training methods	D-21 Modify existing audiovisual materials	D-22 Develop simulator team training criteria	D-23 Revise simulator team training criteria
E Prepare for Instruction	E-1 Review trainee backgrounds	E-2 Review course materials	E-3 Select methods of instruction	E-4 Personalize lesson plan	E-5 Assemble training aids/ equipment	E-6 Set up training area	E-7 Identify personnel dosimetry/safety requirements					
F Coordinate & Schedule Training	F-1 Establish training goals	F-2 Develop a training matrix	F-3 Schedule training activities	F-4 Evaluate vendor training programs	F-5 Select vendor training programs	F-6 Arrange for off-site vendor training	F-7 Arrange for off-site company training	F-8 Arrange for on-site guest instructors	F-9 Facilitate on-the-job training program	F-10 Schedule reactor operator/ senior reactor operator audit exams	F-11 Schedule training program exams	F-12 Arrange for availability of equipment & facilities
G Operate & Maintain Instructional Equipment	G-1 Inventory training aids & equipment	G-2 Inventory lab/simulator equipment	G-3 Order needed equipment	G-4 Operate lab equipment	G-5 Make minor repairs to lab equipment	G-6 Operate simulator	G-7 Identify simulator problems	G-8 Test simulator modifications	G-9 Develop test procedures for simulator	G-10 Run test procedures on simulator	G-11 Process simulator modifications	G-12 Select training equipment
H Deliver Instruction	H-1 Present formal classroom instruction	H-2 Conduct demonstrations	H-3 Conduct seminars/ workshops	H-4 Conduct simulator training	H-5 Conduct tours & walk-downs	H-6 Conduct mock-up training	H-7 Conduct on-the-job training sessions	H-8 Conduct lab exercises	H-9 Administer self-study materials			
I Supervise Trainees	I-1 Monitor lab activities	I-2 Monitor simulator activities	I-3 Tutor trainees	I-4 Conduct performance reviews	I-5 Counsel trainees	I-6 Proctor exams	I-7 Direct trainee presentations					
J Evaluate Trainees	J-1 Conduct written exams	J-2 Conduct performance tests	J-3 Conduct oral exams	J-4 Conduct formative exams	J-5 Conduct summative exams	J-6 Conduct in-course assessment of individuals	J-7 Review test results with trainees	J-8 Conduct end-of-course assessment of individuals				

Duties	Tasks				
K Evaluate Training Effectiveness	K-1 Perform informal oral surveys	K-2 Conduct formal follow-up surveys	K-3 Conduct course critiques	K-4 Analyze test items	K-5 Analyze exam results
	K-6 Make recommendations based on course evaluation	K-7 Evaluate vendor training performance	K-8 Conduct emergency drill critiques		
L Perform Administrative Activities	L-1 Track trainees' progress	L-2 Document trainee attendance	L-3 Compile & review exams	L-4 Grade exams	L-5 Maintain course records
	L-6 Prepare special reports	L-7 Respond to audits	L-8 Serve on committees	L-9 Perform audit of course materials	L-10 Prepare a budget
	L-11 Assist in procedure validation				

Worker Traits and Attitudes

Knowledgable
Enthusiastic
Student oriented
Confident
Patient
Organized
Sense of humor
Flexible/open-minded
Positive
Extrovert/outgoing
Professional
Empathy
Honest
Dedicated/committed
Self-directed

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Verified By:

These companies were verified by 120 expert instructors who responded to a written task inventory. The worker traits and attitudes were specified by five or more respondents and are listed in the order of most frequently to least frequently mentioned.

For information about the modules and other materials that are being developed by the Center, under sponsorship of the multi-state consortium, to address most of the competencies identified, contact the Consortium Manager.

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